Immune Building Program

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Immune Building Overview

Focus: protection from internal attack

Threat
- Protect military buildings from:
  - attack by chemical or biological warfare agents
  - external or internal release

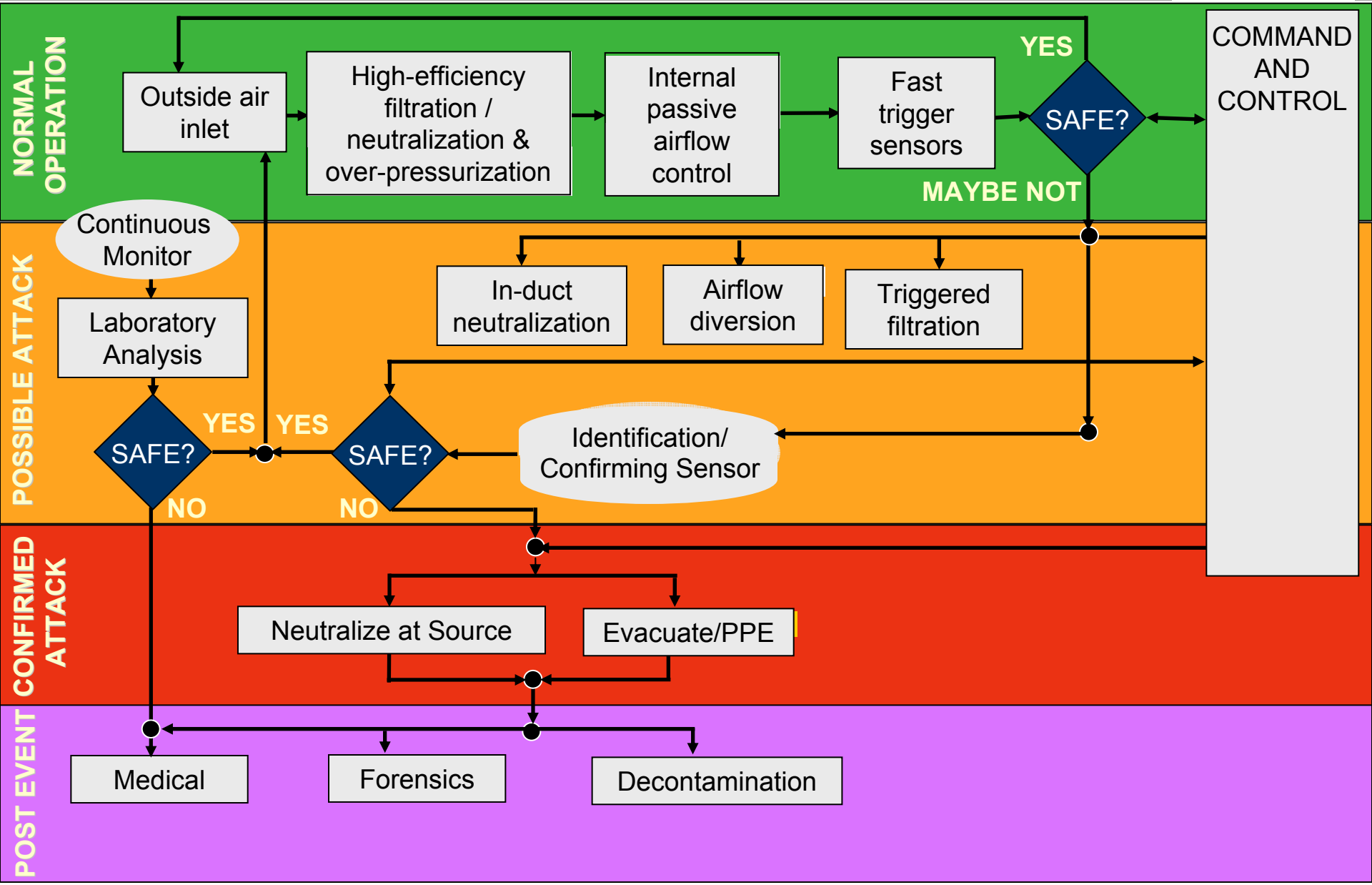
Goal
- Make buildings far less attractive targets

Approach
- Reduce effectiveness of attack via active and passive response of HVAC and other infrastructure modifications (neutralization, filtration, etc.)

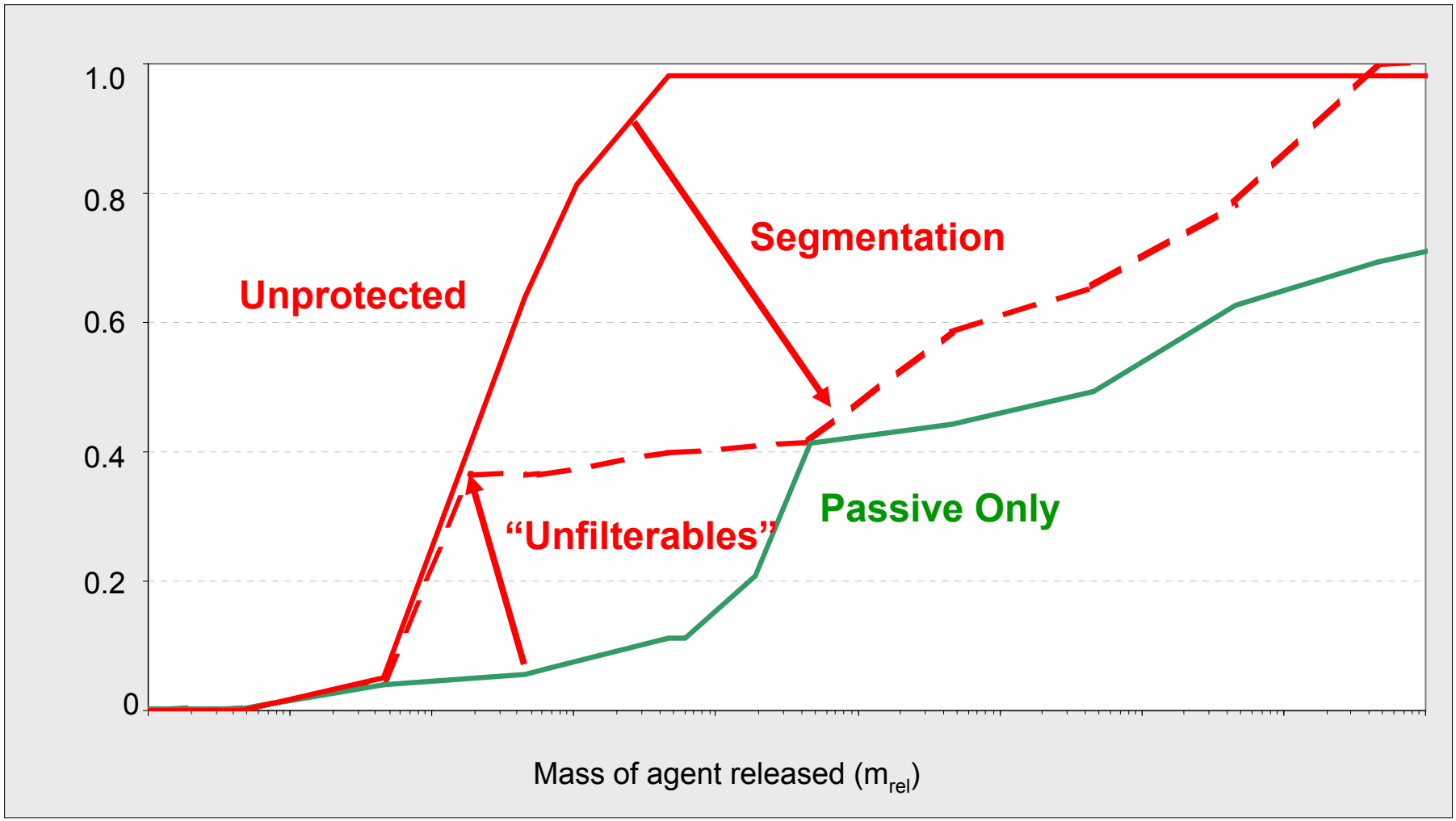
Objectives
- Protect human occupants:
  - stop/neutralize agent before it reaches humans
- Restore building to function, quickly:
  - decontaminate effectively
- Preserve forensic evidence

Payoffs
- Save lives
- Restore OPTEMPO
- Determine treatment required; attribute source of attack

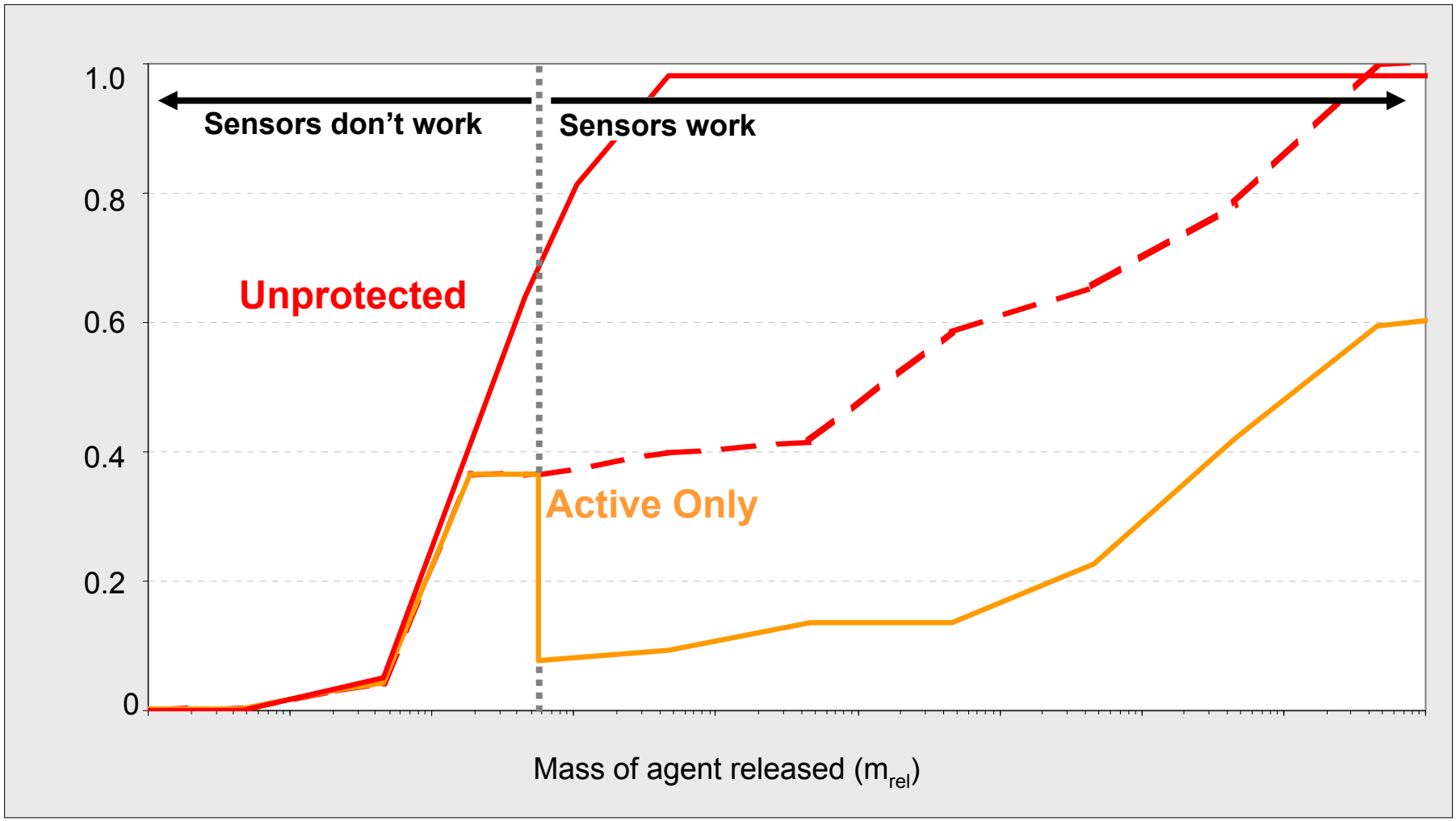
Building Protection Concept



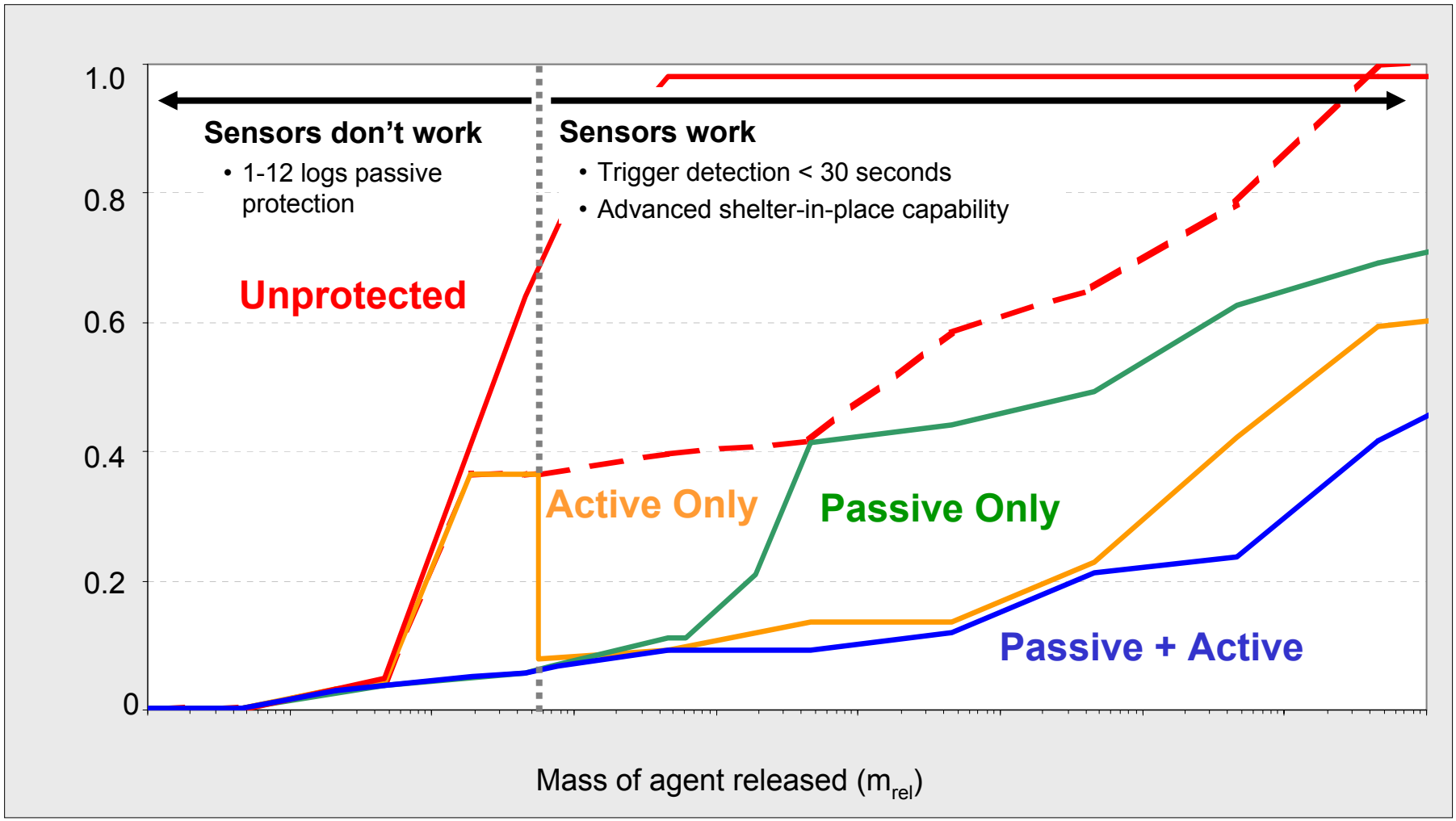
Immune Building Program: Modeling



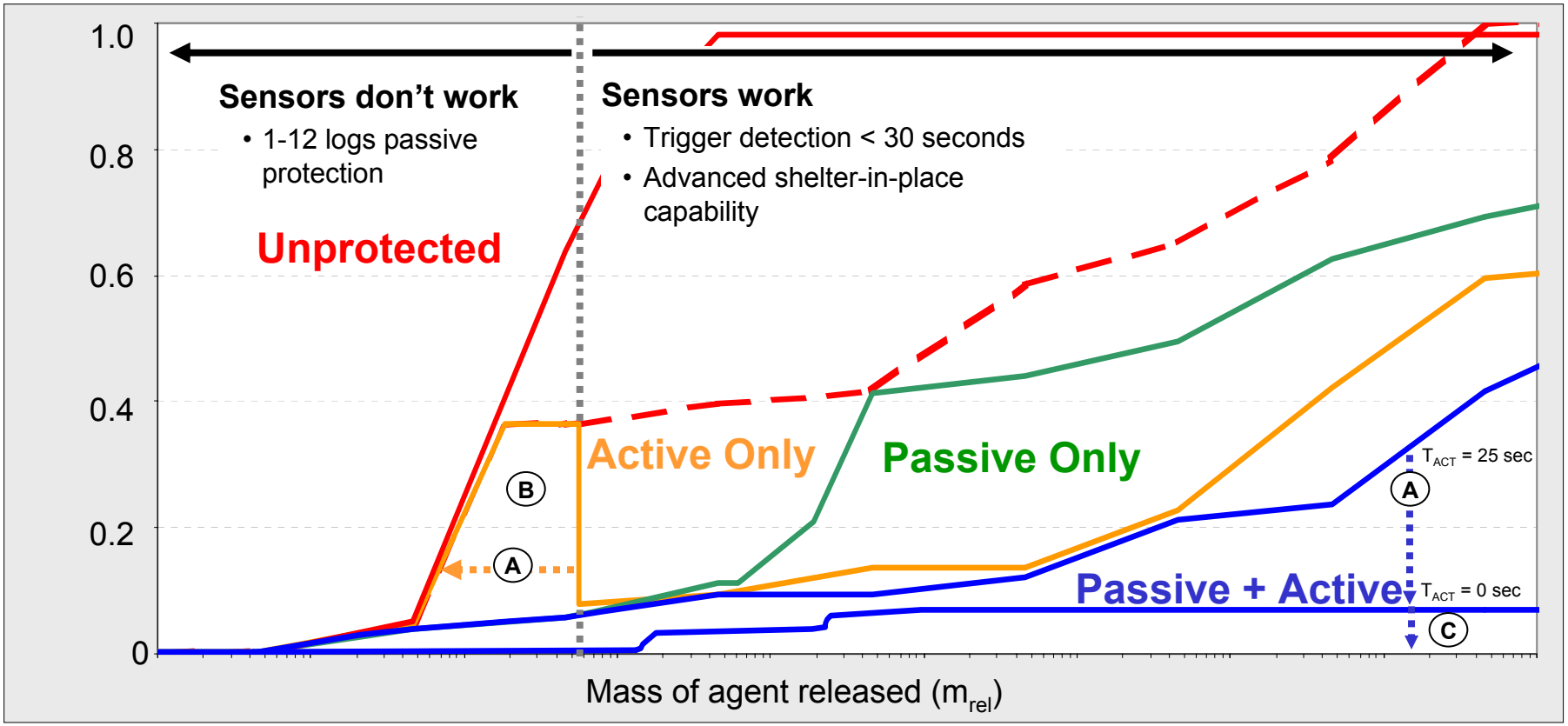
Immune Building Program: Modeling



Immune Building Program: Modeling



DARPA Initiatives



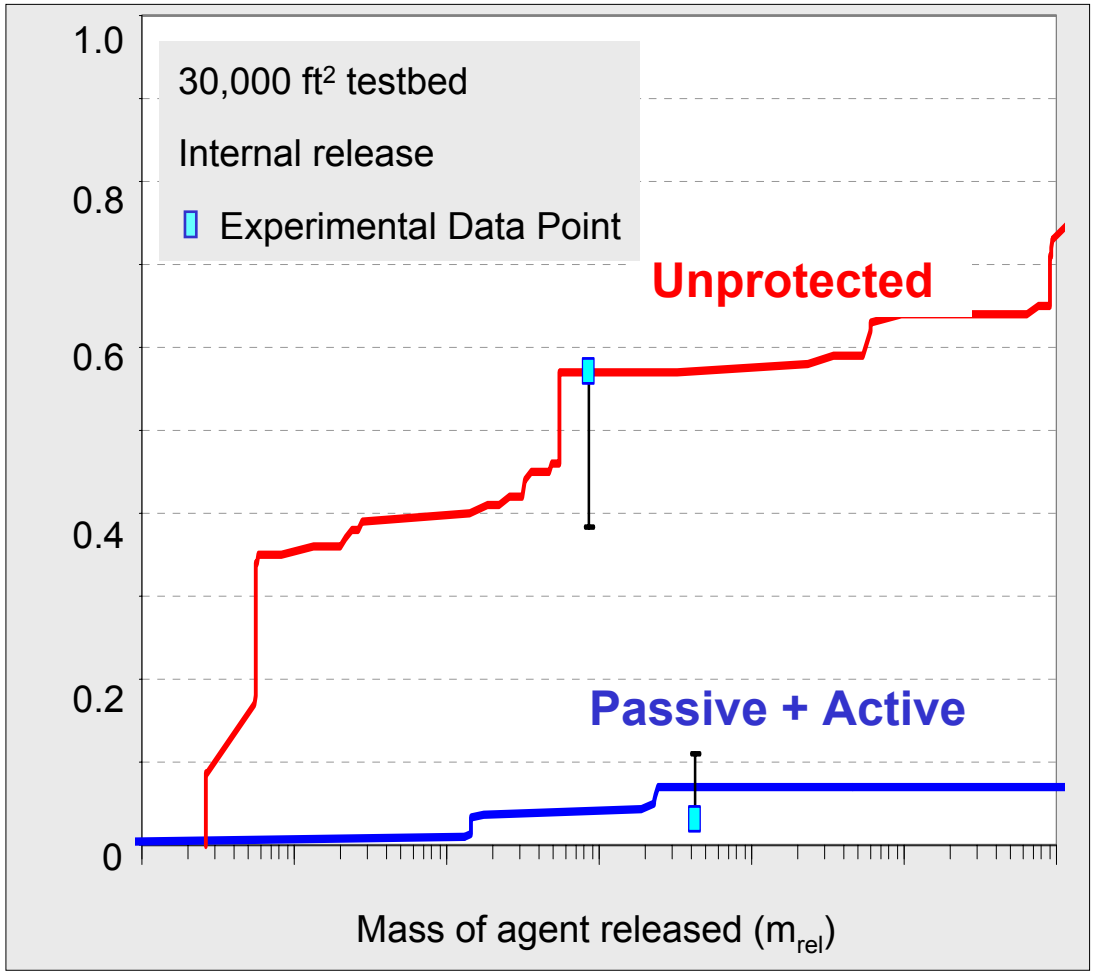
Ⓐ Advanced Triggers
- Detect TICs/unfilterables
- Detect at lower m_{rel} (better sensitivity)
- Fast standoff detection of external releases
- Fast point detection of internal releases
- Improved sensor layout with lower cost sensors
- Enable use of in-duct neutralization
- Lower IB operating costs (low false alarm rate triggers)

Ⓑ Advanced Filtration/Neutralization
- Protect against TICs/unfilterables
- Lower IB operating costs

Ⓒ Advanced Confirmatory Sensors
- Enables use of evacuation and PPE
- Lower IB operating costs

Immune Building Program: Testing

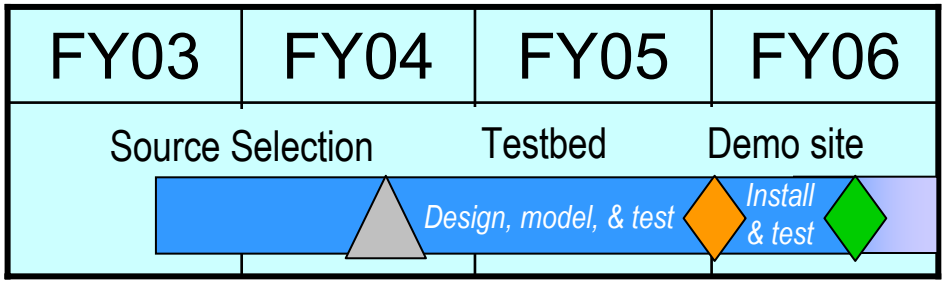
- Active strategies are critical
  - Experiments show sensors effectively initiate active protection
- Optimal architectures include both passive and active components
- Immune Building systems can be applied to diverse building types
  - Specifics will differ from building to building: characterize beforehand (to design an appropriate system) and afterwards (to maintain performance)
  - Coordinate design with HVAC, fire suppression, blast protection, etc. to avoid conflicts (e.g., structural, airflow)



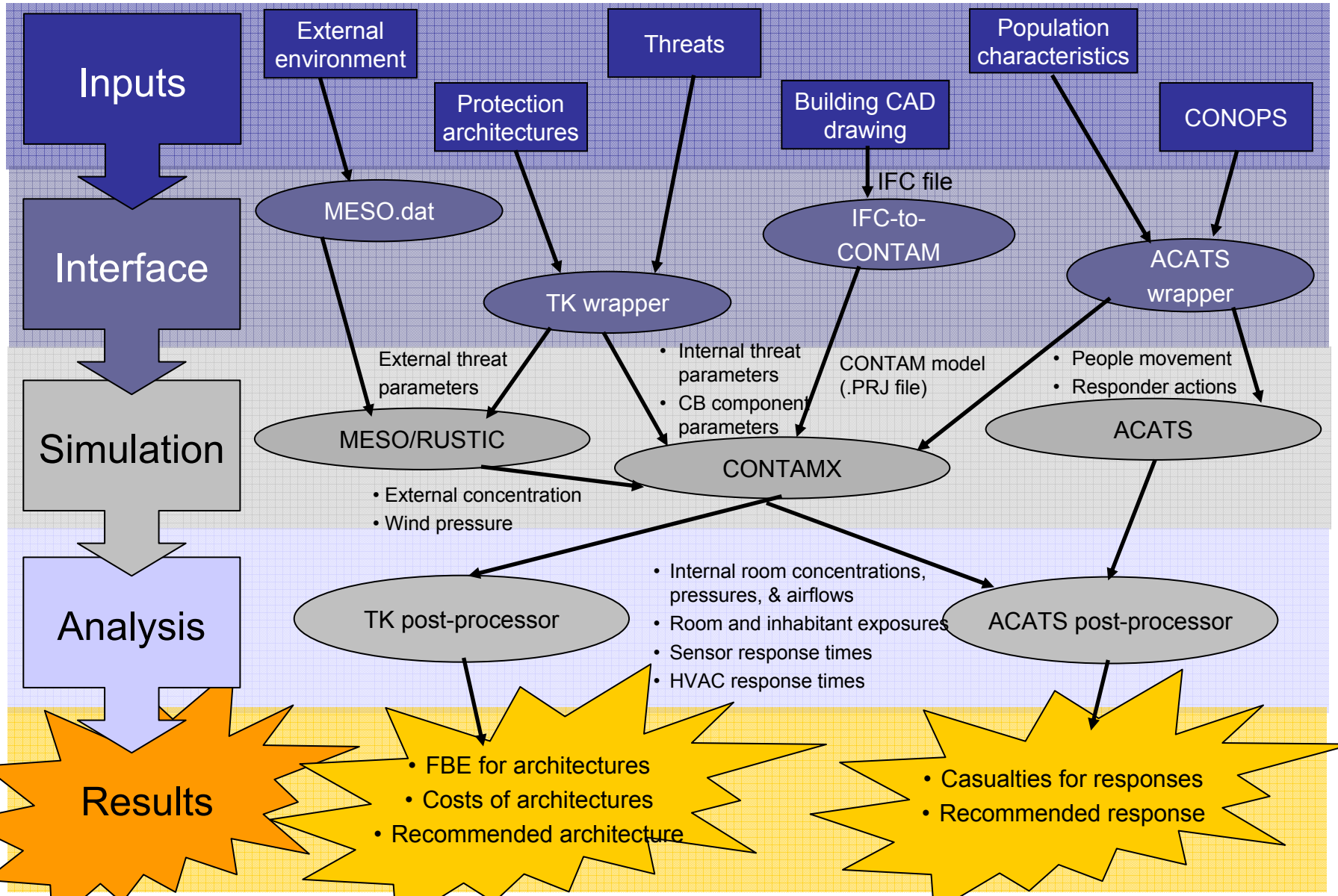
Immune Building Program: Transition

- First *operational* demonstration of Immune Building system in an *occupied* military building
  - Demonstration in Q2 FY06
- Transition and continued operation of the Immune Building Demonstration system
- Capability to produce Immune Buildings is being developed in the private sector
- Interested parties are encouraged to visit the Anniston (testbed) and FLW (demonstration) sites

Nord Hall, Fort Leonard Wood, MO

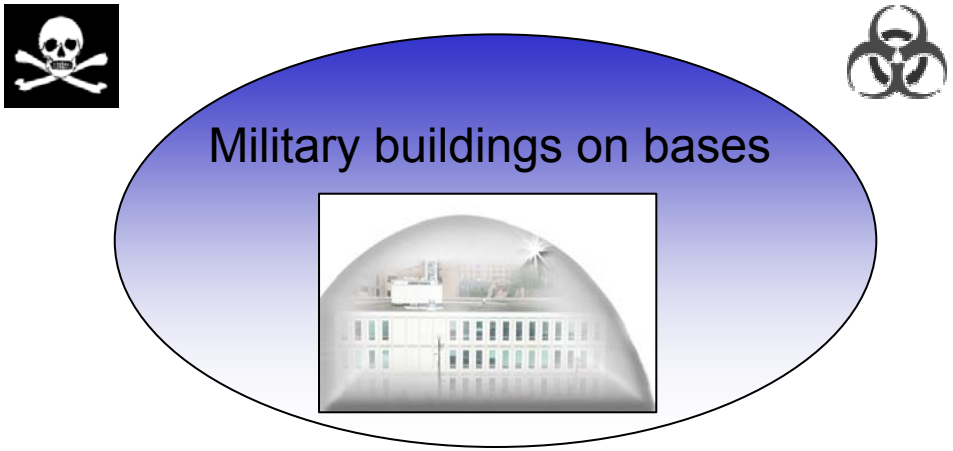


Immune Building M&S Flow Chart



Proactive Defense Against CWA/BWA

MAJOR TARGETS FOR ATTACK



IF SUCCESSFUL Protect the occupants of the building from releases of CWA/BWA both internal and external to the structure

ENABLES Continued strategic military function of Command and Control Centers and military bases